PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference TS 1083 PCT	**FOR FURTHER ACTION**	See Form PCT/IPEA/416
International application No. PCT/EP2004/050017	International filing date *(day/month/year)* 14.01.2004	Priority date *(day/month/year)* 15.01.2003
International Patent Classification (IPC) or national classification and IPC E21B10/62		
Applicant SHELL INTERNATIONALE RESEARCH MAATSCHAPPIJ B.V.et		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 6 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
   a. ☒ *sent to the applicant and to the International Bureau)* a total of 5 sheets, as follows:
      ☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
      ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
   b. ☐ *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

☒	Box No. I	Basis of the opinion
☒	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☒	Box No. VII	Certain defects in the international application
☒	Box No. VIII	Certain observations on the international application

Date of submission of the demand	Date of completion of this report
05.11.2004	24.01.2005
Name and mailing address of the international preliminary examining authority: European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer van Berlo, A Telephone No. +31 70 340-3535

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/EP2004/050017

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

   ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
   - ☐ international search (under Rules 12.3 and 23.1(b))
   - ☐ publication of the international application (under Rule 12.4)
   - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

Description, Pages

1-34	as originally filed

Claims, Numbers

1-11	filed with telefax on 15.11.2004

Drawings, Sheets

1/12-12/12	as originally filed

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:
   - ☐ the description, pages
   - ☐ the claims, Nos.
   - ☐ the drawings, sheets/figs
   - ☐ the sequence listing *(specify)*:
   - ☐ any table(s) related to sequence listing *(specify)*:

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
   - ☐ the description, pages
   - ☐ the claims, Nos.
   - ☐ the drawings, sheets/figs
   - ☐ the sequence listing *(specify)*:
   - ☐ any table(s) related to sequence listing *(specify)*:

* *If item 4 applies, some or all of these sheets may be marked "superseded."*

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/EP2004/050017

Box No. II Priority

1. ☐ This report has been established as if no priority had been claimed due to the failure to furnish within the prescribed time limit the requested:
   - ☐ copy of the earlier application whose priority has been claimed (Rule 66.7(a)).
   - ☐ translation of the earlier application whose priority has been claimed (Rule 66.7(b)).

2. ☒ This report has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rule 64.1). Thus for the purposes of this report, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:

   see separate sheet

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-11
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-11
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-11
	No:	Claims	

2. Citations and explanations (Rule 70.7):

   see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Re Item II

1. The claimed priority date of 15-1-2003 of application numbers EP03250243 and of EP03250242 is currently considered not valid for claim 11. Claim 11 of the application refers to a wellstring assembly, whereas EP03250243 claims a well drilling bit assembly and EP03250242 claims an orienting device. A wellstring assembly is broader than the disclosure of the two earlier filings.

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1.1 The cited document WO00/17488 is regarded as being the closest prior art to the subject-matter of claim 1, and shows (the references in parentheses applying to this document):

A well-drilling bit assembly suitable for through bit operation comprising a well-drilling bit, which includes
- a bit body (60) having upper and lower ends between which ends a passageway is arranged, the bit body being attachable at its upper end to a tubular drill string and the passageway extending between an opening at the upper end and the exterior of the bit body;
- a closure element (70,72) for the passageway co-operating with the lower end of the bit body; and
- a bit-connecting means (86) for releasably connecting the closure element to the bit body so as to selectively close the passageway;
the well-drilling bit assembly further comprising an auxiliary tool (92) for manipulating the closure element,
which auxiliary tool is passable along the passageway in the bit body to the closure element when the bit body and closure element are interconnected with the bit-connecting means, which auxiliary tool comprises a tool-connecting means (96) for selectively connecting the auxiliary tool to the closure element, and an operating means (100) to operate the bit-connecting means which includes releasing the bit-connecting means,
and which auxiliary tool comprises a first member (96, 98) which includes the tool-connecting means and a second member (100) which includes the operating means, which second member is movably arranged relative to the first member so that

it is movable between a first and a second position relative to the first member, wherein in the first position the tool-connecting means is connectable, at least when the bit body and closure element are interconnected with the bit-connecting means, to the closure element.

1.2 The subject-matter of claim 1 differs from WO00/17488, in which the tool-connecting means (secondary latching means) and the bit-connecting means (primary latching means) are operating together in a coupled manner, by its last section:

whereby the bit-connecting means is not operable, and whereby in connected condition of the auxiliary tool with the closure element the bit-connecting means is operable by movement of the second member including the operating means between the first and the second position.

The subject-matter of claim 1 is therefore novel.

1.3 The problem to be solved by the present invention may be regarded as (see for example page 3, line 9 to 23 and page 5, line 12-30):
the fact that the prior art auxiliary tool has two functions coupled to each other, one function being the engaging of the auxiliary tool with the closure element and one being the releasing the bit-connecting means to disconnect the closure element from the bit body (see also the letter of 15.11.2004, page 2, paragraph 7).
This leads to a limited robustness of the manipulation of the closure element.

1.4 The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons:

In claim 1 the auxiliary tool comprises decoupled engaging means and releasing means in order to separate the two functions mentioned in 1.3.
In some prior art engaging and releasing means are independent, however in those cases the releasing means are already downhole prior to running the auxiliary tool and as such they cannot be considered to be part of the auxiliary tool, as is required by the part of claim 1 which states: 'is arranged so that it can pass along the passageway in the first wellstring part'.
Having the releasing means already downhole separate of the engaging means will reduce robustness and therefore it is considered not trivial to combine both decoupled functions in such a tool.

1.5 Claims 2-10 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

Re Item VII

1. Independent claims 1 and 11 are not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the closest prior art WO 00/17488 being placed in the preamble (Rule 6.3(b)(I) PCT) and with the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).

2. The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).

Re Item VIII
Observations on the clarity of the claims

1.1 Claim 11 is not supported by the description as required by Article 6 PCT, as its scope is broader than justified by the description and drawings. The reason therefor is the following:
- *a wellstring assembly with the lower end of the lower wellstring part connectable to or including a drill bit:* this could be any kind of assembly run in the well, such as a drilling string, a casing, a completion, a logging string etc. The description of the first two embodiments refers to a drill string and in connection with figure 14-15 to an orienting device. Despite the passage on page 26, line 14-23 it is not clear how the device would be used with for example a logging string incuding a sidewall coring bit, which would clearly go beyond the description.

1.2 Amended claims 9 and 10 depend on claims 10 and 11 rather than on claims 8 and 9.

C L A I M S

Amended by letter of 15 November 2004

1. A well-drilling bit assembly suitable for through-bit operation comprising a well-drilling bit, which includes
- a bit body having upper and lower ends between which ends a passageway is arranged, the bit body being attachable at its upper end to a tubular drill string and the passageway extending between an opening at the upper end and the exterior of the bit body;
- a closure element for the passageway co-operating with the lower end of the bit body; and
- a bit-connecting means for releasably connecting the closure element to the bit body so as to selectively close the passageway;

the well-drilling bit assembly further comprising an auxiliary tool for manipulating the closure element, which auxiliary tool is passable along the passageway in the bit body to the closure element when the bit body and closure element are interconnected with the bit-connecting means, which auxiliary tool comprises a tool-connecting means for selectively connecting the auxiliary tool to the closure element, and an operating means to operate the bit-connecting means which includes releasing the bit-connecting means,

and which auxiliary tool comprises a first member which includes the tool-connecting means and a second member which includes the operating means, which second member is movably arranged relative to the first member so that it is movable between a first and a second position relative to the first member, wherein in the

first position the tool-connecting means is connectable, at least when the bit body and closure element are interconnected with the bit-connecting means, to the closure element whereby the bit-connecting means is not operable, and whereby in connected condition of the auxiliary tool with the closure element the bit-connecting means is operable by movement of the second member including the operating means between the first and the second position.

2. The well-drilling bit assembly according to claim 1, wherein the tool-connecting means is arranged near the downstream end of the first member, wherein the operating means is arranged near the downstream end of the second member, and wherein the second member is arranged longitudinally slideably along the passageway with respect to the first member, so that the first relative position is an upstream position of the second member, and wherein the second member is moved relative to the first member in downstream direction when moving it towards the second relative position.

3. The well-drilling bit assembly according to claim 2, wherein the first member of the auxiliary tool comprises a substantially tubular body in which the second member is coaxially slideably arranged, wherein the closure element comprises at its upstream end an outer sleeve and a coaxial inner sleeve, wherein the upstream end of the outer sleeve is arranged to cooperate with the tool-connecting means so as to lock the auxiliary tool to the outer sleeve, wherein the upstream end of the inner sleeve is arranged to cooperate with the operating means of the auxiliary tool so that the bit-connecting means is operated by longitudinally sliding the inner sleeve with respect to the outer sleeve.

4. The well-drilling bit assembly according to any one of the previous claims, wherein the bit body further comprises an operable first retainer device for securing the second member of the auxiliary tool in the first relative position when the auxiliary tool is not connected to the closure element.

5. The well-drilling bit assembly according to claim 4, wherein the bit body is provided with a button which projects into the passageway and co-operates with the first retainer device so as to operate the first retainer device at a predetermined relative position between the button and the first retainer device.

6. The well-drilling bit assembly according to any one of the previous claims, further comprising a selectively operable second retainer device for securing the second member of the auxiliary tool in the second relative position when the auxiliary tool is connected to the closure element while the closure element is not connected to the bit body.

7. The well-drilling bit assembly according to claim 6, wherein the bit body is provided with a button which projects into the passageway and co-operates with the second retainer device so as to operate the second retainer device at a predetermined relative position between the button and the second retainer device.

8. The well-drilling bit assembly according to any one of claims 1-7, wherein the passageway and the auxiliary tool are provided with co-operating angular orienting means.

9. The well-drilling bit assembly according to claim 10, wherein the bit body and the auxiliary tool are provided with the co-operating angular orienting means for angularly orienting the auxiliary tool at a first

relative position when moving downwardly along the passageway, and at a lower second relative position when moving upwardly again along the passageway.

10. The well-drilling bit assembly according to claim 11, wherein the auxiliary tool at its outer wall is provided with an outwardly projecting key means, wherein the inner wall of the passageway in the bit body is provided with two guiding rims forming a central guiding groove through which the key can pass, the guiding groove having upstream and downstream ends, further with an upstream camming rim extending from a position upstream of the guiding groove to the upstream end of the guiding groove fully around the inner wall, and with a downstream camming rim extending from a position downstream of the guiding groove to the downstream end of the guiding groove fully around the inner wall, wherein the camming rims and the guiding rims project sufficiently into the passageway so as to engage, when the auxiliary tool is moved through the bit body, the key means and to guide the key means into the guiding groove, thereby angularly orienting the auxiliary tool.

11. A wellstring assembly comprising:

- an upper tubular wellstring part having upper and lower ends between which ends a passageway is arranged;
- a lower wellstring part having upper and lower ends which lower end is connectable to or includes a drill bit, the lower wellstring part co-operating with the lower end of the first wellstring part;
- a releasable wellstring-interconnecting means for selectively interconnecting the lower and upper wellstring parts; and
- an auxiliary tool arranged so that it can pass along the passageway in the upper wellstring part to the lower

wellstring part, when the upper and lower wellstring parts are interconnected, wherein the auxiliary tool comprises a tool-connecting means for selectively connecting the auxiliary tool to the lower wellstring part, and an operating means for connecting or releasing the wellstring-interconnecting means,

wherein the auxiliary tool comprises a first member which includes the tool-connecting means and a second member which includes the operating means, which second member is arranged movably so that it can assume a first and a second position relative to the first member, wherein in the first position the tool-connecting means is connectable, at least when the upper and lower wellstring parts are interconnected, to the lower wellstring part without operating the wellstring-interconnecting means, and wherein after connecting the auxiliary tool to the lower wellstring part the wellstring-interconnecting means can be operated by moving the second member including the operating means between the first and the second position; and

- wherein the upper wellstring part and the auxiliary tool are provided with co-operating angular orienting means for angularly orienting the auxiliary tool at a first relative position when moving downwardly along the passageway, and at a lower second relative position when moving upwardly again along the passageway.

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